

fier 92. The separate channels of the card sensing circuits 71 and keyboard circuits 86 are isolated from each other by two sets of RF switches 94, 95 and all are coupled to the sense amplifier 92. These may be electronic RF switch circuits or reed relays, although the former are preferred. Depending upon whether cards or keys are being sensed, the ten row positions of each column are scanned in sequence, under control of a ten position sequencer 97, which may comprise any conventional stepping arrangement such as a counter and decoding circuits. A 500 pulse per second clock pulse source 99 advances the sequencer 97 for each column, but is arranged to be gated off and on by signals from the sense amplifier 92 and system reset pulses respectively. An astable source of 500 p.p.s. may be used, of course, with the gating being controlled by a flip-flop and AND gate combination (not shown).

Instead of using parallel sense channels and then decoding, therefore, this system much less expensively merely converts the data at successive sensing positions to a time-varying equivalent, passing all the data through the single sense amplifier 92. The time of occurrence of a data manifestation during scanning of a column "locks up" the sequencer 97, which correctly indicates the numerical value represented. This indication may control a printer 100 or other recorder directly, or may be converted to a binary or modified binary code in encoder circuits 103 and then communicated to data storage or transmission means 104. That is, the scanning circuit 88 steps through each of the columns in succession, wherein each row along the column is then scanned by the sequencer 97. If no indication of a data manifestation (e.g., a hole in the card) is found, the sequencer 97 steps to the next row along the column, and no output is derived from the sense amplifier 92. However, if a data manifestation is sensed, the sequencer is stopped via an output signal from the single sense amplifier 92, which output in turn is fed to the clock pulse source 99 to gate the sequencer 97 off as described above. The row on which the data manifestation occurs thus is numerically indicated by the position of the sequencer 97 when it locks up, or stops, and the output from the sequencer 97 is fed to the printer 100, the encoder circuits 103 and the data storage or transmission means 104.

While there have been described above and illustrated in the drawings various forms of data input devices, and systems utilizing such input devices, it will be appreciated that the invention is not limited thereto, but includes all variations and modifications falling within the scope of the appended claims.

What is claimed is:

1. An electronically responsive manual keyboard system comprising: a plurality of circuit key elements, each of the key elements including an exposed touch portion and means providing an electrical capacitive element having a value of approximately 40 micromicrofarads; a plurality of separate conductive circuit means, each including a different key element in its circuit; a plurality of neon gas discharge elements; a plurality of voltage doubler circuits coupling each of said key elements to a different one of said neon gas discharge elements; RF signal source means coupled to each of said key elements and therefrom to the voltage doubler circuits and gas discharge elements; DC bias signal source means coupled to said gas discharge elements; the potentials of the bias signal source means and the RF signal source means providing a potential difference across the gas discharge elements normally insufficient to fire said gas discharge elements; the presence of a body capacitance in circuit with the key element draining the RF signal source potential to increase the potential difference across the neon gas discharge element to above the firing potential; lock-out circuit means coupling each of said gas discharge

elements of a selected group to the voltage doubler circuits of said group; and means coupled to the gas discharge elements for sensing the firing thereof.

2. The invention as set forth in claim 1 above, wherein the lockout circuit means for the selected group of gas discharge elements comprises resistive network means coupled to each of the gas discharge elements of the group, voltage supply means coupled to said resistive network means, and cooperating therewith to maintain a circuit junction at a selected potential, and normally conducting transistor means coupled to the circuit junction and to normally provide a low impedance to ground to the voltage doubler circuits of said group, and coupled to become nonconducting and to maintain the voltage doubler circuits of the group at a voltage level at which the non-fired gas discharge elements will not fire, subsequent to the firing of any one gas discharge element.

3. A data collection system for providing a data indication representative of an input manifestation provided in a one-out-of-a-number code at a number of parallel sensing positions comprising: controllable means coupled to the number of sensing positions for electrically scanning the sensing positions, a single sensing means coupled to the controllable means for detecting signal variations representing the occurrence of a particular input manifestation, advanceable sequencing means responsive to clock pulses and coupled to control said controllable means and gated clock means coupled to be turned off in response to the signal variations from said single sensing means and controlling said sequencing means, said gated clock means to stop said sequencing means at a position corresponding to the position at which the input manifestation occurred, said sequencing means to deliver an output indicative of the position of the input manifestation only when the sequencing means is stopped.

4. An electronic keyboard system comprising: card sensing circuits of the RF energized capacitance responsive type for sensing the perforation patterns in a matrix of rows and columns of a card; a matrix of key elements including exposed touch portions; sensing circuits including RF energizing means coupled to the matrix of key elements; RF scanning means coupled to said card sensing means and said key sensing means for selectively applying RF energizing signals thereto; RF switching means coupled to each of said sensing means, to receive signals provided from one group of signal channels from each of said sensing means; controllable sequencing means for successively activating said RF switching means; gated clock means controlling said sequencing means and being terminable in operation in response to a control signal; and a single sense amplifier means coupled to said RF switch means and responsive to signal manifestations in any of the then active signal channels provided from said RF switch means, and coupled to provide a control signal to said gated clock means.

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